UNITED STATES DISTRICT COURT
WESTERN DISTRICT OF NORTH CAROLINA
CHARLOTTE DIVISION

BRUCE RHYNE and JANICE RHYNE, Plaintiffs, v. UNITED STATES STEEL CORPORATION, et al., Defendants.	Civil Action No.: 3:18-cv-00197

MEMORANDUM OF LAW IN SUPPORT OF DEFENDANTS SAFETY-KLEEN SYSTEMS, INC. AND UNITED STATES STEEL CORPORATION'S JOINT MOTION TO EXCLUDE THE TESTIMONY, OPINIONS, AND REPORT OF DR. ROBERT HERRICK

Defendants SAFETY-KLEEN SYSTEMS, INC. ("Safety-Kleen") and UNITED STATES STEEL CORPORATION ("US Steel") respectfully move this Honorable Court for an Order pursuant to Federal Rule of Evidence 702 and *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 509 U.S. 579 (1993) excluding the testimony, opinions, and report of Plaintiffs' expert industrial hygienist Dr. Robert Herrick because Dr. Herrick's opinions are unreliable and scientifically invalid.

INTRODUCTION

Dr. Herrick was retained by Plaintiffs to provide an opinion on Plaintiff Bruce Rhyne's alleged exposure to benzene. Dr. Herrick's opinions are entirely unreliable and plagued by an astonishing list of failures any one of which alone would be sufficient to exclude Dr. Herrick's opinions, but the totality of which is alarming. In calculating Plaintiff's[1] alleged exposure, Dr.

[1] Reference to Plaintiff in the singular refers to Plaintiff Bruce Rhyne, whose alleged exposure to benzene is the primary basis for all of Plaintiffs' claims. Plaintiff Janice Rhyne's loss of consortium claims are derivative.

Herrick: (1) **admits** that he made critical calculation errors; (2) failed to employ a level of intellectual rigor characteristic of other industrial hygienists in their field; (3) ignored substantive, admitted sources of benzene exposure; (4) included sources of benzene exposure from a product this Court has already determined Plaintiff did not utilize; (5) ignored reliable sources of information for no discernible reason; (6) deployed inapplicable European exposure models with no data from the United States for certain of the exposures[2]; (7) within that model, utilized improper settings and ignored relevant, real-world data; and (8) **admits** that he did not validate his results.

Dr. Herrick's opinion is riddled with flaws, errors, and failures. The failures he admits to alone are enough to preclude his opinion; the totality of his failures requires it. Dr. Herrick must not be permitted to provide his unreliable opinions to the jury.

BACKGROUND

I. PLAINTIFFS' ALLEGATIONS AGAINST MOVING DEFENDANTS

Plaintiffs allege that Plaintiff Bruce Rhyne was exposed to benzene contained in a dozen different Defendants' products and ingredients from 1970 to 2015[3], and that these exposures caused Plaintiff to develop acute myeloid leukemia ("AML"). *See* Exhibit 1, Plaintiffs' Complaint, ¶¶ 19-22. While the totality of Plaintiff's alleged exposure includes benzene, toluene, xylene, mineral spirits, naphtha, heptanes, petroleum distillates, acetone, polycyclic aromatic hydrocarbons, raffinate and ethylene compounds, *id.* ¶ 21, Plaintiffs' claims against Defendants Safety-Kleen and US Steel are far more limited. Plaintiffs allege exposure to benzene associated with Safety-Kleen's 105 Solvent ("105 Solvent"), a mineral-spirits based solvent, and the raffinate

[2] Dr. Herrick did not use the ART model for his exposure assessment regarding Liquid Wrench and raffinate but his assessments for those products are inadmissible for all of the other reasons cited in this brief.
[3] It is undisputed that US Steel's raffinate was no longer included in any formula of Liquid Wrench after April 1978.

produced by US Steel for use in Radiator Specialty's Liquid Wrench product. *See id.*, ¶¶ 25, 29; *see also* Exhibit 2, September 17, 2019 Report of Dr. Robert Herrick ("Herrick Report") at 19, 24.

II. DR. HERRICK'S RETENTION

The vast majority of Plaintiff's alleged exposure occurred during his employment at various Duke Power (now Duke Energy) facilities in North and South Carolina from 1976 to 2015. *See id.* at 2. Plaintiffs retained Dr. Herrick to retroactively assess Mr. Rhyne's benzene exposures. *See* Exhibit 3, November 6, 2019 Deposition of Dr. Herrick ("Herrick Dep. Tr.") at 12:5-9, 184:11-14.

Dr. Herrick's role was to assess, as accurately as possible, Plaintiff's total exposure to benzene, and the individual exposures attributable to each Defendant's product(s). *See id.* at 12:5-9, 184:11-14; *see also* Exhibit 2, Herrick Report at 43-44.

III. DR. HERRICK'S FAILURES, LIMITATIONS, AND CRITICAL ADMISSIONS

Dr. Herrick was deposed on November 6, 2019. During his deposition, Dr. Herrick's opinions and conclusions were reviewed, resulting in a series of critical admissions and revelations. Specifically:

- Dr. Herrick admitted at deposition to numerous inaccuracies in his calculations. Exhibit 3, Herrick Dep. Tr. at 237:13-23 (admitting he incorporated exposures he should not have into his exposure assessment); *id.* at 344:2-345:6 (conceding he distorted individual product exposure calculations with secondary sources of exposure). In one instance, Dr. Herrick blamed the inaccuracies in his conclusions on poor proofreading, *id.* at 168:4-10; in numerous other instances, he offered to re-do his calculations, *see id.* at 240:20-23; 260:8-11; 265:6-7; 344:25-345:6.
- Dr. Herrick ignored numerous alleged benzene exposures from products Mr. Rhyne admitted to using. *See id.* at 44:8-24; *see also* Exhibit 2, Herrick Report at 30-31.
- Conversely, and inexplicably, Dr. Herrick calculated alleged benzene exposures for a benzene-containing product from former Defendant CRC Industries, Inc. even in the absence of any evidence that Mr. Rhyne ever used that product – to the point the Court recently granted CRC's motion for summary judgment for lack of exposure. *See* Exhibit 3, Herrick Dep. Tr. at 47:7-15; *see also* Exhibit 4, Order, March 24, 2020, ECF 180 ("ECF 180") (Order granting CRC's motion for

summary judgment based on lack of exposure to a benzene-containing CRC product).

- Dr. Herrick failed to ask for pertinent benzene testing data produced by Safety-Kleen in discovery (Exhibit 5, Recycled 105 Composite Samples, SKS-RHYNE-001106-09; Exhibit 6, Recycled 105 Composite Data, SKS-RHYNE-003209-32) and then testified it would have been useful to have that data. *See* Exhibit 3, Herrick Dep. Tr. 187:25-188:7. He selected specific products to assess based on an April 1992 approved chemical list from a facility where Mr. Rhyne was not even working when the list was generated. ECF 180 ("Critically, Mr. Rhyne did not work at the McGuire facility in April 1992…."); *see* Exhibit 2, Herrick Report at 24, 27, 30; *see also* Exhibit 3, Herrick Dep. Tr. at 24:17-21.

- Dr. Herrick relied on an inapplicable European exposure model calibrated with absolutely no data from the United States, *see id.* at 87:23-88:2, **even though this European model was developed to assess exposures to large populations of workers covering multiple companies or facility sites and is not calibrated for individual exposure assessments**. *See* Exhibit 7, Jody Schinkel, et al., *Reliability of the Advanced REACH Tool (ART)*, Vol. 58, No.4, Ann. Occup. Hyg. 450, 451 (2014); *see also* Exhibit 8, October 17, 2019 Report of John Spencer ("Spencer Report") at 36-37.

- In addition to relying on a wholly inappropriate model, Dr. Herrick chose inaccurate data and used incorrect settings, while also **ignoring relevant real-world data that would have produced far more accurate and representative results** for Plaintiff's alleged exposures. *See* Exhibit 3, Herrick Dep. Tr. at 229:21-230:8 (conceding that mineral spirits is an available input on the European model, but that he instead selected benzene when attempting to model mineral spirits products).

- Dr. Herrick admits that he completely failed to validate his results (though he readily could have attempted to do so, as demonstrated by John Spencer, who did, in fact, validate his own results). *Compare id.* at 255:12-17 ("Well, like any of these model predictions, I didn't formally validate the result.") *with* Exhibit 8, Spencer Report at 16 ("In order to better determine the reliability of the model a series of validation procedures were applied.").

- Dr. Herrick also admits that his use of the European model **does not allow him to isolate exposure results by product**, a troubling concession given that his report purports to separate the alleged exposures by product. *Compare* Exhibit 3, Herrick Dep. Tr. at 344:25-345:6 ("I wasn't really trying to do the calculation in such a way that attributed something uniquely to that product.") *with* Exhibit 2, Herrick Report at 43 ("Table 4 Cumulative Benzene Exposure by Product and Facility").

- Dr. Herrick assumed, without any basis in fact, that US Steel's raffinate was in Liquid Wrench until January 1979. He admitted that if this unsupported assumption was not correct, he overestimated the Liquid Wrench exposure by 27%. *See* Exhibit 3, Herrick Dep. Tr. at 166-167.

- Dr. Herrick testified that he often, in cases like this one, gets and reviews information on hazard communications, training, and respirator usage. He did not

> have, nor ask for, that information here. When asked why not, he said, "Well, that's a good question. I mean, it could have been useful. *See id.* at 187-188.

Dr. Herrick's methodology is not scientifically valid or reliable and he should not be allowed to present his inaccurate and unscientific opinions to a jury. His cavalier attitude in forming his opinions belies intellectual and scientific rigor. Preclusion under Federal Rule of Evidence 702 and *Daubert* and its progeny is proper.

***DAUBERT* ADMISSIBILITY REQUIREMENTS**

Expert testimony is only admissible if the proffered testimony satisfies Federal Rule of Evidence 702 and the standards enunciated in *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 509 U.S. 579 (1993) and its progeny. Rule 702 provides that a proposed scientific expert such as Dr. Herrick may only testify if:

> (a) the expert's scientific, technical, or other specialized knowledge will help the trier of fact to understand the evidence or to determine a fact in issue;
> (b) the testimony is based on sufficient facts or data;
> (c) the testimony is the product of reliable principles and methods; **and**
> (d) the expert has reliably applied the principles and methods to the facts of the case.

Fed. R. Evid. 702 (emphasis added). In *Daubert*, the Court clarified the role of the trial court as a gatekeeper to determine whether expert testimony is relevant and reliable, and provided four non-exclusive factors: (1) whether the theory or technique can be and has been tested; (2) whether the theory or technique has been subjected to peer review and publication; (3) in the case of a particular scientific technique, the known or potential rate of error; and (4) whether the theory or technique has been generally accepted. *Id.*, 509 U.S. at 593; *see also Kumho Tire Co., Ltd., et al. v. Carmichael, et al.*, 526 U.S. 137 (1999) (trial court must "make certain that an expert, whether basing testimony upon professional studies or personal experience, employs in the courtroom the same level of intellectual rigor that characterizes the practice of an expert in the relevant field"); *Belville v. Ford Motor Co.*, 919 F.3d 224, 232 (4th Cir. 2019) (trial court must determine "whether

the reasoning or methodology underlying the testimony is scientifically valid and … whether that reasoning or methodology properly can be applied to the facts in issue").

While *Daubert* provided guidance on precluding experts who use unreliable methodology, the trial court must also address the reliability of expert conclusions. Accordingly, even where a putatively qualified expert offers opinions, and claims to base those opinions upon recognized methodology, **a trial court still has the independent obligation to determine that the opinions are logically supported by the claimed methodology**. *See General Electric Company v. Joiner*, 522 U.S. 136, 146 (1997) ("conclusions and methodology are not entirely distinct from one another. . . . But nothing . . . requires a district court to admit opinion evidence that is connected to existing data only by the *ipse dixit* of the expert. **A court may conclude that there is simply too great an analytical gap between the data and the opinion proffered**.") (emphasis added).

The trial court's critical gatekeeping role **"is especially sensitive in cases 'where the plaintiff claims that exposure to a toxic substance caused his injury, [because a] jury may blindly accept an expert's opinion that conforms with their underlying fears of toxic substances without carefully understanding or examining the basis for that opinion.'"** *Whiting v. Bos. Edison Co.*, 891 F. Supp. 12, 24 (D. Mass. 1995) (quoting *O'Conner v. Commonwealth Edison Co.*, 807 F. Supp. 1376, 1391 (C.D.Ill.1992)) (emphasis added).

Here, Dr. Herrick's purported opinions lack the reliability required under Rule 702 and *Daubert*. As such, Dr. Herrick should be precluding from testifying about Plaintiff's alleged exposure to benzene.

ARGUMENT

I. DR. HERRICK FAILS TO USE RELIABLE METHODOLOGY

A. Dr. Herrick Uses A Scientifically Invalid Exposure Model

To be considered reliable, the methodology (in this instance, the scientific model) used by an expert must be relevant and fit the facts of the case. *See Burst v. Shell Oil Co.*, 104 F. Supp. 3d 773, 778 (E.D. La. 2015) (excluding plaintiff's industrial hygienist). To that end, the *Daubert* "fit" test considers "whether expert testimony proffered in the case is sufficiently tied to the facts of the case that it will aid the jury in resolving a factual dispute." *Daubert*, 509 U.S. at 591; *Viva Healthcare Packaging USA Inc. v. CTL Packaging USA Inc.*, 197 F. Supp. 3d 837, 846 (W.D.N.C. 2016) (quoting *Daubert* 509 U.S. at 591). The test acknowledges that "scientific validity for one purpose is not necessarily scientific validity for other, unrelated purposes." *Viva Healthcare Packaging USA Inc.*, 197 F. Supp. 3d at 846.

Here, Dr. Herrick relies in large part on the Advanced REACH Tool ("ART") for his retrospective exposure analysis of Plaintiff's work at Duke Power. *See* Exhibit 2, Herrick Report at 18-19, 26-27, 31. The **ART model, while valid for certain purposes and uses, is not scientifically valid for the purpose for which Dr. Herrick attempts to deploy it**.[4]

The ART model is an evolving online exposure model accessible at https://www.advancedreachtool.com. The model's website provides links to a number of articles that explain the purpose, scope, intent, and intended use of the ART model. Specifically, the ART model was developed to perform occupational exposure assessments to fulfill European Union legal requirements pursuant to the Regulation, Evaluation, Authorization, and Restriction of Chemicals ("REACH") initiative that makes European industry responsible for assessing and managing the risk posed by chemicals. *See* Exhibit 9, Kevin McNally, et al., *Advanced REACH*

[4] Even though Dr. Herrick did not use the ART model for his assessment of exposure to US Steel's raffinate, the use of it for other products necessarily skews and renders unreliable his overall assessment of a cumulative dose. The proposition "garbage in, garbage out" applies.

Tool: A Bayesian Model for Occupational Exposure Assessment, Vol. 58, No.5, Ann. Occup. Hyg. 551, 551-52 (2014); *see also* Exhibit 7, Schinkel, *supra*, at 451.

REACH compliance requires the occupational analysis of thousands of exposure scenarios, which is impractical to do on a case-by-case basis. *See* Exhibit 9, McNally, *supra*, at 552. The ART model was developed as a means of estimating "exposure levels for specific scenarios for **groups** of workers that share operational conditions and risk management measures across **different workplaces in Europe**." *See* Exhibit 7, Schinkel, *supra*, at 451 (emphasis added); *see also* Exhibit 3, Herrick Dep. Tr. at 86:3-7.

ART is not a tool for an individual retrospective exposure analysis, in particular in an individual nuclear facility in the United States. *See* Exhibit 10, Antti Joonas Koivisto, *Source specific exposure and risk assessment for indoor aerosols*, 668 Science of the Total Environment 13, 16 (2019) (concluding that "[p]roperly applied physical mass-balance models appear to be stronger tools for case-specific exposure assessments" than the use of empirical models such as ART).

Dr. Herrick does not dispute that the ART model was developed to assist with REACH compliance. *See* Exhibit 3, Herrick Dep. Tr. at 86: 3-7. Notably, Dr. Herrick conceded at deposition that he could not find a scenario in the ART database that was comparable to Mr. Rhyne's alleged exposures at a nuclear facility to conduct his exposure assessment. *See id.* at 107:14-108:11. In other words, the website for the ART model and the scientific authorities referenced therein all note that ART has a highly particularized and specific utility. *See* Exhibit 7, Schinkel, *supra*, at 451. There is no basis to allow him to provide opinions based on his improper use of ART to the jury.

While the ART model is an evolving method for the European industrial sector to comply with the European Union's regulatory requirements under REACH, it was not developed or calibrated to perform individual retrospective analyses of benzene exposures in a United States power plant. *Daubert* makes clear that while a method may be scientifically valid for one purpose, it is inadmissible when used for another unrelated purpose. *See* 509 U.S. at 591; *see also Garlinger v. Hardee's Food Sys., Inc.*, 16 F. App'x 232, 236 (4th Cir. 2001) (affirming exclusion of plaintiff's expert because while his testimony, "may have scientific validity in some cases, it does not "fit" this case."). Dr. Herrick's use of ART is improper and must be excluded.

B. ART Lacks Widespread Acceptance For Modeling Individual Retrospective Exposure Assessments

Where, as here, an expert relies on a methodology that is not designed for the purpose for which the expert deploys it, "[w]idespread acceptance can be an important factor" in evaluating the method; indeed, "a known technique which has been able to attract only minimal support with the community may properly be viewed with skepticism." *Nease v. Ford Motor Co.*, 848 F.3d 219, 229 (4th Cir. 2017) (quoting *Daubert*, 509 U.S. at 594).

To that end, Dr. Herrick relies on a single study to support his use of the ART model. *See* Exhibit 3, Herrick Dep. Tr. at 165:6-13, 255:18-21, 341:3-18; *see also* Exhibit 2, Herrick Report at 26. (citing Exhibit 11, Mallory LeBlanc, et al., *Comparison of the near field/far field model and the advanced reach tool (ART) model V1.5: exposure estimates to benzene during parts washing with mineral spirits*, 221 Int'l J. of Hygiene and Envtl. Health 231 (2018)). Dr. Herrick's single study clearly demonstrates that the ART model does not enjoy widespread use. Indeed, the study is clear: "[t]o our knowledge, **this study is the first application of the ART to worker exposures to vapors** emitted from low concentrations of a solvent/contaminant in a common solvent, e.g., benzene in mineral spirits. . . ." Exhibit 11, LeBlanc, *supra*, at 235 (emphasis added). By

definition, **"first application" cannot equate to widespread acceptance.** *See In re Paoli R.R. Yard PCB Litig.*, 35 F.3d 717, 773 (3d Cir. 1994) (excluding expert testimony that rested on novel scientific methodology); *see also McCullock v. H.B. Fuller Co.*, 61 F.3d 1038, 1042 (2d Cir. 1995) ("Thorny problems of admissibility arise when an expert seeks to base his opinion on novel or unorthodox techniques that have yet to stand the tests of time to prove their validity.").

Moreover, the ART model is not generally accepted in the relevant scientific community for individual retrospective exposure assessment and should therefore be rejected as unreliable. *See Belville v. Ford Motor Co.*, 919 F.3d at 229, 233 (affirming exclusion of expert and explaining that general acceptance is relevant to the reliability inquiry of an expert's methodology); *see also Moore v. Ashland Chem. Inc.*, 151 F.3d 269, 279 (5th Cir. 1998) (affirming exclusion of plaintiff's expert in part because his theory had not been generally accepted in the scientific community).

Dr. Herrick cannot credibly claim that his use of the ART model to measure Mr. Rhyne's individual benzene exposure has garnered widespread acceptance among industrial hygienists when the scientific literature he relies on is clear that ART does not enjoy such acceptance, *see* LeBlanc, *supra*, at 235, and even when used for its intended purpose, the ART model is still evolving and simply "a good starting point for further development," *see* Exhibit 12, *Erik* Tielemans, et al., *Advanced REACH Tool (ART): Overview of Version 1.0 and Research Needs*, Vol. 55, No.9 Ann. Occup. Hyg. 949, 956 (2011).

II. DR. HERRICK'S EXPOSURE ASSESSMENT LACKS VALID DATA AND INTELLECTUAL RIGOR

In order to testify on a complex scientific issue, in particular in a toxic exposure case, a testifying expert must demonstrate "the same level of intellectual rigor that characterizes the practice of an expert in his field." *Kumho Tire Co., Ltd. v. Carmichael*, 526 U.S. at 152. Dr.

Herrick's report reflects a litany of failures that preclude any reasonable argument that his report and opinion reflect the intellectual rigor of a professional industrial hygienist.

Dr. Herrick's assessment of Plaintiff's alleged benzene exposures is inherently unreliable because Dr. Herrick ignored relevant exposures, relied on non-existent exposures, ignored relevant benzene testing data produced in discovery, relied on an inapplicable European testing model, entered speculative data into the model, and failed to validate his results. Dr. Herrick has failed to demonstrate "the same level of intellectual rigor that characterizes the practice of an expert in his field" and must therefore be excluded.

A. Dr. Herrick Includes Unsubstantiated Exposures

To be reliable, Dr. Herrick's testimony "must be based on scientific, technical, or other specialized knowledge and not on belief or speculation, and **inferences must be derived using scientific or other valid methods**." *Belville v. Ford Motor Co.*, 919 F.3d 224, 232-33 (4th Cir. 2019) (citing *Oglesby v. Gen. Motors Corp.*, 190 F.3d 244, 250 (4th Cir. 1999)). Further, "[a]ny step [in methodology or reasoning] that renders the analysis unreliable ... renders the expert's testimony inadmissible. This is true whether the step completely changes a reliable methodology or merely misapplies that methodology." *In re Paoli Yard PCB Litigation*, 35 F.3d at 745.

Part of Dr. Herrick's retention was to identify Plaintiff's cumulative exposure to benzene. *See* Exhibit 3, Herrick Dep. Tr. at 73:24-74:6; *see also* Exhibit 2, Herrick Report at 44. To do so, Dr. Herrick was obligated to rely on data that is itself reliable. *See Burst*, 104 F. Supp. 3d at 786 (E.D. La. 2015) (excluding plaintiff's industrial hygienists and explaining that when an expert relies on invalid or non-existent data, his results are inevitably unreliable); *see also Castellow v. Chevron USA*, 97 F. Supp. 2d 780, 792 (S.D. Tex. 2000) (excluding plaintiff's industrial hygienist for relying on inadequate data).

Instead, Dr. Herrick's cumulative benzene exposure calculation assumed and included exposures to CRC 3-36 (a benzene-containing product manufactured by former Defendant CRC), **even though Dr. Herrick admitted at deposition that he had no way of identifying what CRC product Mr. Rhyne used**. *See* Exhibit 3, Herrick Dep. Tr. 25:16-26:8.

Indeed, Dr. Herrick's baseless inclusion of CRC's benzene-containing product is all the more alarming in light of the Court's subsequent decision granting CRC's motion for summary judgment on the basis that "**Plaintiffs have failed to come forward with sufficient evidence that the CRC Industries product used by Mr. Rhyne was CRC 3-36, as opposed to another CRC Industries product that did not contain benzene**." *See* Exhibit 4, ECF 180 at 8 (emphasis added).

Dr. Herrick supported his decision to assume that Plaintiff was exposed to CRC 3-36 because of an April 1992 approved chemicals list that included CRC 3-36. *See* Exhibit 3, Herrick Dep. Tr. at 24:8-19. Yet Dr. Herrick **admitted** at deposition that the list does **not** identify the product(s) Plaintiff may have used:

> **Q.** How did this entry on this list [the April 1992 approved chemical list for McGuire facility] on this page tell you that he actually used that product?
> **A.** Oh, I see. Well, it's – it doesn't really.

Id. at 26:5-8. In granting CRC's motion for summary judgment, the Court came to the same correct conclusion: the "inclusion of CRC 3-36 on the April 1992 approved chemical list for the McGuire facility is insufficient evidence that Mr. Rhyne used CRC 3-36 to create a genuine dispute of material fact." *See* Exhibit 4, ECF 180 at 7.

While there is no objective justification for Dr. Herrick to include CRC 3-36 in his calculations of cumulative benzene exposure, the impact is obvious: by including benzene

exposures to a product for which there is no evidence of exposure into his cumulative assessment, Dr. Herrick artificially inflated Plaintiff's total alleged benzene exposure.

This type of manipulation of data is speculative, not scientifically valid, not reliable, and not characteristic of the intellectual rigor employed by an expert in the field outside of litigation. Indeed, Dr. Herrick's reliance on non-existent data artificially inflated his entire analysis and rendered his opinions speculative and unreliable. *See Castellow*, 97 F. Supp. 2d at 792 (S.D. Tex. 2000) (excluding plaintiff's industrial hygienist in a benzene AML case and stating that where an expert's data is invalid or non-existent, his technique and results will be unreliable). Accordingly, Dr. Herrick's testimony should be precluded. *See Burst*, 104 F. Supp. 3d at 786 (E.D. La. 2015) (explaining that when an expert relies on invalid or non-existent data, his results are inevitably unreliable); *see also Castellow*, 97 F. Supp. 2d at 792.

Dr. Herrick's inclusion of CRC 3-36 is even more troubling in light of the fact that Plaintiffs' own former industrial hygienist, Stephen Petty, did not include an analysis of Mr. Rhyne's alleged exposure to CRC because "Mr. Rhyne was not able to identify the specific CRC cleaner used…." *See* Exhibit 13, October 1, 2017 Report of Stephen Petty ("Petty Report") at 110; *see also* Exhibit 3, Herrick Dep. Tr. at 29:18-22. Defendants' industrial hygienist, John Spencer (who disagrees with Mr. Petty's analysis on other grounds), also excluded CRC for the same reason. *See* Exhibit 8, Spencer Report at 25.

B. Dr. Herrick Omitted Benzene Data Despite Plaintiff's Admitted Exposure

Dr. Herrick's inexplicable decision to include CRC 3-36 exposure in his assessment is all the more alarming because Dr. Herrick also neglected to include relevant benzene exposures from products Plaintiff **did** testify to using. Specifically, Plaintiff testified that he used Spotcheck, manufactured by Magnuflux Corporation (not a defendant in this case), and Tap Magic,

manufactured by Defendant Steco Corporation. *See* Exhibit 2, Herrick Report at 30-31; *see also* Exhibit 14, B. Rhyne Dep. Tr. at 81:6-18, 83:22-84:1, 333:24-334:3.[5] Dr. Herrick's stated reasons for ignoring these uncontested exposures is puzzling.

First, Dr. Herrick notes in his report that he neglected to analyze Sptocheck, the product of the non-defendant, because, "[t[he record in this case does not indicate the composition of Spot Check [*sic*].…" *See* Exhibit 2, Herrick Report at 31. This statement is, at a minimum, a gross misrepresentation. First, at deposition, Dr. Herrick made clear that he made little effort to search the record for the composition before dismissing it from his analysis:

> **Q.** Did you ask Mr. DuPont if he had an MSDS for Spotcheck for the relevant time?
> **A.** I think I did, because as we, you know, exchanged information back and forth, you know, where there were gaps and you know, missing information or – or documents that I could have used, I – I followed up and asked, yeah.
> **Q.** Do you have a specific recollection of asking him that?
> **A.** **I don't.**

Exhibit 3, Herrick Dep. Tr. at 53:15-24 (emphasis added). Moreover, Plaintiffs' former industrial hygienist, Stephen Petty, was able to access not only the Spotcheck data, but also specifically the benzene content of Spotcheck during the alleged exposure period. *See* Exhibit 13, Petty Report at 152-54. Thus, while Defendants may take issue with Petty's report for any number of other reasons, **it is evident that the information was available to Dr. Herrick, and he simply opted to ignore it, in particular given his admission that "I had Petty's report as a starting point. So you know, I looked at that before I started writing my own report.**" *See* Exhibit 3, Herrick Dep. Tr. at 29:3-7 (emphasis added).

Dr. Herrick also excluded any analysis of the benzene exposure associated with Tap Magic, despite Plaintiff's allegations of benzene exposure from this product. *See* Exhibit 1, Compl., ¶ 33;

[5] Because it spans four volumes, only the cited portions of Plaintiff Bruce Rhyne's deposition transcript are in Exhibit 14, however, Defendants will gladly make the full transcript available upon request.

see also Exhibit 15, Plaintiffs' Responses to Safety-Kleen's Interrogatories, Response No. 18.[6] Here, Dr. Herrick justified this gap in his analysis by claiming the record does not reflect which specific Tap Magic product Mr. Rhyne used. *See* Exhibit 2, Herrick Report at 30. In so stating, Dr. Herrick directly contradicts himself: his report states that the April 1992 approved chemical list includes a specific product, "Pro Tap Magic Cutting Fluid Red Y 002049 Steco Corp." *Id.* In other words, the April 1992 approved chemical list was sufficient for Dr. Herrick to identify a CRC product, despite contradictory testimony from Plaintiff, *see* Exhibit 14, B. Rhyne Dep. Tr. at 445:10-12, but insufficient for Dr. Herrick to identify the Tap Magic product specifically named on the April 1992 approved chemical list. *See* Exhibit 2, Herrick Report at 24, 30; *see also* Exhibit 3, Herrick Dep. Tr. 24:17-21. While Defendants agree with the Court that the April 1992 approved chemical list is not representative of the products Mr. Rhyne actually used, Dr. Herrick's contrary positions on that document reflect a lack of internal consistency and informational integrity that undermines the validity of his entire report. *See In re Zoloft (Sertraline Hydrochloride) Prod. Liab. Litig.*, 858 F.3d 787, 792 (3d Cir. 2017) (affirming exclusion of expert for inconsistent application of methodology).

Dr. Herrick has no objective basis for his decision to exclude Spotcheck and Tap Magic, but the impact is clear: ignoring these exposures meaningfully increases the percentage contributions of each *Defendant* to the cumulative benzene exposure. *See* Exhibit 3, Herrick Dep. Tr. at 77:19-78:8 (testifying that if he had included exposures to Spotcheck or Tap Magic, the percentage contributions of a given defendant [discussed in the context of CRC but applicable to all defendants] to Plaintiff's cumulative exposure would decrease).

[6] After this case was dismissed from Pennsylvania state court for forum *non-conveniens* no new interrogatories were exchanged, hence why the responses contain the Pennsylvania caption.

Dr. Herrick's exclusion of this critical data warrants preclusion. *See In re Mirena Ius Levonorgestrel-Related Prod. Liab. Litig. (No. II)*, 341 F. Supp. 3d 213, 242 (S.D.N.Y. 2018) ("Where an expert ignores evidence that is highly relevant to his conclusion, contrary to his own stated methodology, exclusion of the expert's testimony is warranted."); *see also* Exhibit 16, *Zimmer, Inc. v. Stryker Corp.*, No. 3:14-CV-152 JD, 2018 WL 276324, at *6 (N.D. Ind. Jan. 3, 2018) ("When an expert ignores critical data in forming his opinions, he fails to satisfy Daubert.").

Dr. Herrick's choice to exclude Spotcheck and Tap Magic benzene exposures was not based on scientifically valid reasoning, but, at best, on ignorance of the documents in his possession and inconsistent selection of data. This type of "methodology" is unreliable and warrants exclusion. *See In re Mirena Ius Levonorgestrel-Related Prod. Liab. Litig. (No. II)*, 341 F. Supp. 3d at 277 (excluding expert for ignoring relevant evidence and inconsistently selecting data); *see also Zimmer*, 2018 WL 276324, at *6.

C. Dr. Herrick Ignored Relevant and Reliable Real World Data For No Discernible Reason In Favor Of Irrelevant Data

In analyzing Plaintiff's exposure to Safety-Kleen 105 Solvent, Dr. Herrick assumed the concentration of benzene in the solvent was 58 parts per million ("ppm"). *See* Exhibit 3, Herrick Dep. Tr. at 217:17-19; *see also* Exhibit 2, Herrick Report at 26. Dr. Herrick's decision to use the figure of 58 ppm arises from Exhibit 17, Fedoruk et al., *Benzene Exposure Assessment for Use of a Mineral Spirits-Based Degreaser*, 18 Applied Occup. and Envtl. Hygiene 764, 771 (2003) (the "Fedoruk Study"). The study in question, however, is not representative of the benzene actually in the solvent as determined by accepted testing methodologies. In the Fedoruk Study, the solvent's benzene level was intentionally increased, for testing purposes only, from the amount determined to be actually in the solvent, by "spiking" the solvent with approximately 50 ppm of pure benzene to get it to 58 ppm. *See id.* at 768-69 ("**Study 2** [Dr. Herrick rejected Study 1 because the benzene

content (9 ppm) was too low in his opinion, *see* Exhibit 3, Herrick Dep. Tr. at 328:10-20; significantly, the Study 1 benzene content was virtually identical to the Study 2 benzene content less the spiked amount of 50 ppm] **involved spiking the product to a target benzene concentration of approximately 50 ppm greater than the standard amount present in recycled solvent**." (emphasis added) (as noted *infra* at 17-18, the pre-spiked 8 or 9 ppm in Fedoruk, like the 32.1, 22.5, and 15.6 ppm observed at the Safety-Kleen facility that serviced Mr. Rhyne's employer, are all significantly lower than the artificially spiked 58 ppm that Dr. Herrick relied on); *see also* Exhibit 3, Herrick Dep. Tr. at 217:17-218:1. Subsequent to this specific and intentional manipulation of the unnamed solvent, the researchers conducted air monitoring for one hour and noted that after just five hours of use, the benzene concentration (58 ppm) had halved, and after 16 hours it had been reduced by an order of magnitude. *See* Exhibit 17, Fedoruk, *supra* at 771. In other words, the study evaluated the substantial reduction in benzene concentration when the solvent was manipulated with an overload of pure benzene; the study did not attempt to or purport to analyze the measurements of benzene in the ordinary course usage of solvent, for individuals using solvent in the manner described by Plaintiff at deposition. *See id.* at 768-69.

At deposition, Dr. Herrick was questioned about his decision to rely on the Fedoruk Study. Specifically, he was asked whether the 58 parts per million is "in any way based on evidence that's been produced in this case?" Dr. Herrick responded, "[w]ell, yeah, in terms of, you know, what was really available about the mineral spirits that were used in these power plants, you know, I didn't really have any direct analysis or -- or specific information, you know, that would let me try to hone in on that." *See* Exhibit 3 Herrick Dep. Tr. at 324:8-19.

Of course, this statement is not entirely accurate. First, Dr. Herrick's report states that he had testing data from 1980 on Safety-Kleen solvent showing a benzene concentration of 32.7 ppm.

See Exhibit 2, Herrick Report at 24 (citing 1980 testing data on Safety-Kleen 105 Solvent from Gulf Coast Laboratories, Inc. [cited by Dr. Herrick as "Documents Produced SAL SK 7306-7367]"). However, he fails to explain why he ignored this data. *See id.* at 24-27. Second, Safety-Kleen produced quarterly testing data of the benzene content of its 105 Solvent during the relevant timeframe and from the Lexington, South Carolina facility that provided the 105 Solvent allegedly used by Plaintiff. *See* Exhibit 5-6, SKS-RHYNE-001106-09, 003209-32. These documents demonstrate that the average benzene content in 105 Solvent at the Lexington, South Carolina facility for 1992-93 was 32.1 ppm. *See id.* In 1994, that number dropped to 22.5 ppm in the first quarter, and 15.6 ppm in the fourth. Exhibit 6, SKS-RHYNE-003209-32. In other words, for just the period of 1992-1994, real world testing produced by Safety-Kleen in this action shows that the figure relied on by Dr. Herrick was inflated anywhere from 80% (32.1 to 58 ppm) to 157% (22.5 to 58 ppm) to as much as 271% (15.6 to 58 ppm).

Dr. Herrick admitted at deposition that "the quality of the information you put in you know, clearly does determine the – quality of the output." *See* Exhibit 3, Herrick Dep. Tr. at 101:12-14. Nevertheless, Dr. Herrick ignored (or did not seek) real-world testing data on the concentration of benzene in Safety-Kleen 105 Solvent, produced in discovery in this case, in favor of a single study in which the researchers intentionally "spiked" the solvent with pure benzene. *See id.* at 217:17-218:1. This inaccurate and improper data requires exclusion; where "the 'data' from which his modeling assumptions arise is invalid, or non-existent, then there is no hope that his technique, much less his results, is going to be reliable." *Castellow*, 97 F. Supp. 2d at 792.

Safety-Kleen also produced a 1995 industrial hygiene product risk evaluation performed on its 105 Solvent by the National Medical Advisory Service ("NMAS"), in which personal air sampling was taken at industrial facilities for workers using Safety-Kleen parts washers with 105

Solvent. *See* Exhibit 18, Safety-Kleen 105 Solvent Product Risk Evaluation, SKS-RHYNE-001236-001847 ("NMAS Study"). Despite having access to this information, Dr. Herrick testified:

> **A.** …in other cases where I've had, like, **detailed reports about industrial hygiene measurements**, for example, that people made, you know, that kind of **helped shed light on the – the levels of exposure that people had….**
> **Q.** Did you ask for any of that in this case?
> **A.** No I didn't, so –
> **Q.** Why not?
> **A.** Well that's a good question. I mean, **it could have been useful. I mean, I had the impression that they didn't have, you know, a lot of air sampling and industrial hygiene measurements**, for example.

Exhibit 3, Herrick Dep. Tr. at 187:14-188:7 (emphasis added). In other words, Dr. Herrick did not even know if this information existed, because he simply opted not to ask for it. That is unfortunate, because NMAS data would have demonstrated, yet again, that Dr. Herrick's calculations were meaningfully flawed. The NMAS data showed that not only were all of the personal 8-hour time-weighted-average ("TWA") results for benzene exposure well below the acceptable exposure limit of 0.1 ppm, but the mean 8-hour TWA was only 0.008 ppm. Exhibit 18, NMAS Study at 75/SKS-RHYNE-001313. This data was measured during periods of 143 minutes of Safety-Kleen parts washer use in industrial facilities. *Id.* In contrast, Dr. Herrick's ART model calculations for Plaintiff's exposures at Duke Power, for a period of only 60 minutes of use, produced a mean 8-hour TWA of 0.2 ppm, which is more than 25 times greater than real-world data taken in NMAS. *See* Exhibit 2, Herrick Report at 37. Further, his ART calculations for a period of three hours of use produced a mean 8-hour TWA of 8.2 ppm, which is more than 100 times greater than the NMAS data. *See id.* at 35. These wide discrepancies speak to the inapplicability of the ART model for individual retrospective exposure assessments and the problems with Dr. Herrick's reliance on a benzene concentration of 58 ppm based on the Fedoruk (2003) study, which explicitly stated it "**involved spiking the product to a target benzene**

concentration of approximately 50 ppm greater than the standard amount present in recycled solvent." Exhibit 17, Fedoruk, *supra*, at 768-69 (emphasis added).

Dr. Herrick failed to account for or even discuss this testing, which directly contradicts the data he relied on, thus rendering his methodology unreliable. *See Yates v. Ford Motor Co.*, 113 F. Supp. 3d 841, 858 (E.D.N.C. 2015) ("An expert's opinion may be unreliable if he fails to account for contrary scientific literature and instead selectively chooses his support from the scientific landscape."); *In re Zoloft (Sertraline Hydrochloride) Prod. Liab. Litig.*, 26 F. Supp. 3d 449, 460-61 (E.D. Pa. 2014) (holding expert's methodology unreliable because she selectively discussed studies most supportive of her conclusions and failed to account for contrary evidence).

Dr. Herrick's assumptions related to benzene content in 105 Solvent are, at best, speculative – and thus inadmissible. *See Tyger Const. Co. Inc. v. Pensacola Const. Co.*, 29 F.3d 137, 142 (4th Cir. 1994) ("An expert's opinion should be excluded when it is based on assumptions which are speculative and are not supported by the record.").

D. Dr. Herrick's Implementation Of The ART Model Is Scientifically Invalid And Unreliable

Misapplication of the model that an expert uses mandates exclusion of expert testimony. *See Burst*, 104 F. Supp. 3d at 786; *see also Castellow*, 97 F.Supp.2d at 792. Even assuming, *arguendo*, that Dr. Herrick's selection or the ART model was appropriate (and, as discussed previously, the ART model is completely inappropriate for calculating Plaintiff's cumulative benzene exposure), Dr. Herrick's application of the ART model independently undermines the admissibility of his opinions. Dr. Herrick *twice* fails to properly utilize the ART model: (1) he selects the wrong criteria, at least in part because he does not know how to use the ART model; and (2) he combines two independent factors that must be independently analyzed.

The ART model presents users with a series of selections to make for the scenario being analyzed. *See* Exhibit 11, LeBlanc, *supra*, at 232-33. One of these selections, perhaps the most important, is the agent used. *See id.* at 233. For this critical step (relative to 105 Solvent, a mineral spirit), Dr. Herrick had the choice to select mineral spirits or benzene. *See* Exhibit, 3 Herrick Dep. Tr. at 229:21-230:8. Counterintuitively, when analyzing mineral spirits products like Safety-Kleen and Varsol, **Dr. Herrick selected benzene instead of mineral spirits**:

> **Q.** Can you use ART to calculate exposure in mineral spirits?
> **A.** It turns out you can, yeah. You know, I didn't realize that until fairly recently that you could, you know, dial that in as a mixture.
> **Q.** Could you have done that in this case – and done a calculation?
> **A.** You – I mean, the – the short answer is yes – you know, with the caveat that, you know, as I'm sure you know, there's a wide range of values for the vapor pressure of mineral spirits.

Id. at 229:21-230:8. Dr. Herrick's choice is all the more concerning in light of his explicit acknowledgement of the vast difference in benzene content between mineral spirits and benzene. *See id.* at 267:15-18 ("…if I compared, say, mineral spirits with pure benzene, there's no doubt that there's less benzene exposure associated with that mineral spirits."). Dr. Herrick provides no explanation for selecting benzene rather than mineral spirits when analyzing mineral spirits, except his apparent lack of awareness of the ability to select mineral spirits as the agent. *See id.* at 229:21-230:8. This failure to understand and scientifically apply the exposure modeling (that is incorrect in any event, as discussed previously) mandates exclusion of Dr. Herrick's testimony. *See In re TMI Litig.*, 193 F.3d 613, 695 (3d Cir. 1999) (affirming exclusion of expert for misapplication of methodology for running formula without relevant coefficient).

Dr. Herrick's second substantive failure in applying the ART model is his failure to independently calculate near-field (benzene exposure to the product in use by Plaintiff) and far-field (benzene exposure to products being used around Plaintiff) exposures. *See* Exhibit 3, Herrick

Dep. Tr. at 238:22-25 ("**Q.** You don't know how much of that is attributed to near field and far field? **A.** No, you can't tell just, you know from these results [the results in his report]."), 343:9-345:6. In fact, Dr. Herrick combines these two exposures into a single figure, without determining what percentage of that number each field represents. *See id.* at 238:8-15, 343:9-345:6. This is significant because by factoring in far-field exposures (without a way to isolate them later), Dr. Herrick augments the benzene exposure from the individual product in use (near-field), making it impossible to know the true level of benzene exposure from a Defendant's product. *Id.* at 342:8-343:8. When confronted on this point, Dr. Herrick claimed he "wasn't really trying to do the calculation in a way that attributed something uniquely to that product." *See id.* at 344:3-5. Despite that statement, Dr. Herrick's report very clearly purports to attribute individual exposure numbers **to each product**. *See* Exhibit 2, Herrick Report at 39 ("Table 3 Daily Average Benzene Exposure **by Product** and Facility") (emphasis added), 43 ("Table 4 Cumulative Benzene Exposure **by Product** and Facility.") (emphasis added). In fact, his "Exposure Assessment," stretching from pages 17-39 of his report, is largely a product-by-product breakdown of Mr. Rhyne's alleged individual exposures. *Id.* at 17-39.

Oddly, after conceding that his methodology presents no way of identifying the actual benzene exposure from a given product, Dr. Herrick offered to "go back and – and recalculate and – and, you know, **just estimate** – just model only the contribution from the parts washing source, the near field where he was working, and not include the far field contribution." *See* Exhibit 3, Herrick Dep. Tr. at 344:25-345:6 (emphasis added). In effect, Dr. Herrick testified that the benzene exposure numbers in his report are incorrect and the only way for him to provide correct numbers would be to go back and run the ART model differently than he did for his report (despite the fact that his figures were provided to and relied upon by Plaintiffs' causation experts). *See id.* at 344:3-

345:6. This admission is telling, and renders the entirety of his report unreliable; as such, Dr. Herrick's cumulative exposure numbers, which necessarily depend on the individual exposure calculations that he apparently needs to re-do, must necessarily also be unreliable. *See Castellow*, 97 F. Supp. 2d at 792 ("…if the 'data' from which his modeling assumptions arise is invalid, or non-existent, then there is no hope that his technique, much less his results, is going to be reliable.").

These failures by Dr. Herrick are not merely academic in nature – the number, variety, and significance of Dr. Herrick's errors meaningfully impact the calculations Dr. Herrick would theoretically present to the jury. By way of example:

- Dr. Herrick's improper application of the ART model for individual exposure analysis, plus his incorrect assumption of a 58 ppm benzene content for 105 Solvent, and using benzene as the agent instead of mineral spirits (even though 105 Solvent is incontestably a mineral spirit) demonstrates, for modeling 60 minutes of parts-washing using mineral spirits, a 50th percentile exposure of 7.1mg/m3 (2.23 ppm). *See* Exhibit 2, Herrick Report at 27.

- By comparison, in the Fedoruk (2003) study relied on by Dr. Herrick, ***actual*** air sampling of 60 minutes of parts-washing using mineral spirits spiked to 58 ppm benzene resulted in a personal breathing zone concentration of just 0.44 ppm. *See* Exhibit 17, Fedoruk, *supra*, at 769 (expressed as 440 parts per billion, equaling 0.44 ppm, in "Table II").

In other words, Dr. Herrick's incorrect use of the ART model, combined with his misapplication of the model's design, combined with his inaccurate data resulted in an overestimated exposure by a factor of five (0.44 x 5.07 = 2.23).

Perhaps for this reason, Dr. Herrick also failed to validate his results. *See* Exhibit 3, Herrick Dep. Tr. at 255:12-17 ("Well, like any of these model predictions, I didn't formally validate the result."). Comparing Dr. Herrick's model to real world data demonstrates that there is something seriously amiss with Dr. Herrick's data (by comparison, Defendants' expert, John Spencer, did in fact validate his results). This failure alone warrants exclusion of Dr. Herrick's opinions. *Burst*,

104 F. Supp. 3d at 779 (E.D. La. 2015) ("**Miller's methodology is also unreliable because he failed to validate his result against any study that measured actual exposure levels.**").

E. Dr. Herrick Relied on Unsupported Assumptions and Did Not Pursue Relevant Information

Dr. Herrick assumed, without any basis in fact, that Mr. Rhyne used the raffinate formula of Liquid Wrench until January 1979. He made this assumption knowing that raffinate was no longer included in Liquid Wrench after April 1978. He admitted that if this unsupported assumption was not correct, he overestimated the Liquid Wrench exposure by 27%. *See* Exhibit 3, Herrick Dep. Tr. at 166-167. He failed to review or ask for information about hazard communications at Mr. Rhyne's employment, training that Mr. Rhyne did or did not receive, or whether Mr. Rhyne used or did not use a respirator or other personal protective equipment. When asked why he did not ask for that information he said, "Well, that's a good question. I mean, it could have been useful." *See id.* at 187-188.

CONCLUSION

Plaintiffs retained Dr. Herrick to calculate Plaintiff's exposure to benzene. Dr. Herrick failed to utilize an appropriate model, failed to use the model he selected properly, failed to exclude irrelevant data, failed to account for known data, failed to consider relevant real world data, and failed to validate his results. Dr. Herrick's opinions are unreliable and unhelpful to the jury and should be excluded from evidence pursuant to Federal Rule of Evidence 702 and *Daubert*.

Respectfully Submitted this 7th day of April, 2020.

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CERTIFICATE OF SERVICE

This is to certify that the undersigned counsel has this date filed **MEMORANDUM OF LAW IN SUPPORT OF JOINT MOTION TO EXCLUDE DR. ROBERT HERRICK** with the Court using the CM/ECF system which will send notification of such filing to all counsel of record.

This the 7th day of April, 2020.

By: /s/ Peri A. Berger
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